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Wen-Jen Wu

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EXAMINER

PHAN, RAYMOND NGAN

ART UNIT

PAPER NUMBER

2111

DATE MAILED: 06/16/2004

3

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/074,910

Applicant(s)

WU ET AL.

Examiner

Raymond Phan

Art Unit

2111

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24 is/are allowed.
- 6) ☒ Claim(s) 1-5, 13, 14, 25-27 and 29 is/are rejected.
- 7) ☒ Claim(s) 6-12, 15-23, 28, 30 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### **Part III DETAILED ACTION**

#### ***Notice to Applicant(s)***

1. This application has been examined. Claims 1-31 are pending.
2. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 2111.

#### ***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-5, 13-14, 25-27, 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Williams et al. (US No. 6,567,875) in view of Brief et al. (US NO. 6,205,501).

In regard to claims 1, 25, Williams et al. disclose an USB compound device, utilized to connect a plurality of function devices to a USB Bus and make the connected function have the advantage of "plug-and-play" function, comprising: a serial interface engine (SIE) for decoding the signals received from the USB Bus

and then transforming them from serial form into parallel form, coding the signals to be transmitted to the USB Bus after transforming them from parallel form into serial form, and performing cyclic redundancy check code inspection while transmitting/receiving (see col. 4, lines 24-62); and a circuitry 184 for storing and managing a plurality of device addresses designated by a USB host, and proceeding with data transmission, wherein said circuitry does not have the functions of said USB transceiver and said SIE, and its one terminal is connected to said SIE while the other terminal is connected to a plurality of non-USB interfaces, which are used to connect to the plural function devices, via a microprocessor or controller (see figure 5, col. 5, line 17 through col. 6, line 48). But William et al. do not specifically disclose a USB transceiver for utilizing as the connection point between the plurality function devices and the USB Bus, transmitting signals to or receiving signals from the USB Bus and performing the signal format conversion. However Brief et al. disclose a USB transceiver for utilizing as the connection point between the plurality function devices and the USB Bus, transmitting signals to or receiving signals from the USB Bus and performing the signal format conversion (see figure 7, col. 7, lines 11-42). Therefore, it would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have combined the teachings of Brief et al. within the system of Williams et al. because it would perform a control transfer over a USB and in particular to responding to setup, data, and status transactions of a control transfer.

In regard to claim 2, Williams et al. disclose a circuitry comprising: a generic endpoint state machine; an address/endpoint management mechanism for storing a plurality of address/endpoint configurations, wherein said USB

compound device executes USB standard communication protocols to communicate with the USB host via said generic endpoint state machine according to the types of the endpoints stored in said address/endpoint management mechanism; and a memory module for temporarily storing data being transmitted (see col. 6, lines 7-49).

In regard to claim 3, Williams et al. disclose wherein the plurality of address/endpoint configurations stored in said address/endpoint management mechanism include a set of address/endpoint configuration of a virtual hub, said set of address/endpoint configuration of the virtual hub is used by said circuitry when it executes the function as a hub via said USB transceiver, said serial interface engine and said microprocessor or controller (see col. 6, line 62 through col. 7, line 59).

In regard to claim 4, Williams et al. disclose wherein said circuitry further comprising: an endpoint variable register for storing the states of the plural endpoints, said endpoint variable register is accessed and updated by said generic endpoint state machine (see col. 6, lines 7-62).

In regard to claims 5, 14, 29, Williams et al. disclose wherein said memory module comprising: a memory buffer for temporarily storing the data being transmitted; and a memory management unit for accessing data from said memory buffer, comprising: a memory configuration mechanism of endpoint for storing the memory allocation data and the maximum packet sizes of the endpoints in said memory buffer; and a memory access control unit for accessing data from said memory buffer according to the endpoint numbers of signals and the memory allocation data stored in said memory configuration mechanism of endpoint (see col. 6, line 62 through col. 7, line 59).

In regard to claim 13, Williams et al. disclose wherein the circuitry includes: a generic endpoint state machine; an address/endpoint management mechanism for storing a plurality of address/endpoint configurations, wherein the USB compound device executes USB standard communication protocols to communicate with the USB host via said generic endpoint state machine according to the types of the endpoints stored in said address/endpoint management mechanism (see col. 6, lines 7-49); and an endpoint variable register for storing the states of the plural endpoints, said endpoint variable register is accessed and updated by said generic endpoint state machine (see col. 6, lines 7-28).

In regard to claim 26, Williams et al. disclose method for implementing a USB compound device, wherein said compound device is used to connect at least two function devices having no USB logic circuits to a USB Bus, and enable the connected function devices to have the plug-and-play function, said method comprising the following steps: setting up a physical layer block for connecting to the USB Bus, format translation, coding or decoding, and cyclic redundancy check code inspection (see col. 4, lines 8-58); setting up a link layer block for receiving the signals transmitted from said physical layer, proceeding the comparison of address/endpoint and communicating with the USB host under communication protocols according to the states of the endpoints (see col. 6, lines 7-49); setting up a memory management unit for receiving endpoint numbers from said link layer and proceeding with data accessing according to the endpoint numbers (see col. 6, line 62 through col. 7, line 59); setting up an application interface engine for receiving the signals from said link layer block and said memory management unit, and executing the signals or data transmission with an application unit (see col. 7, lines 11-42); and setting up a memory buffer for storing the temporary data of the

endpoints (see col. 6, line 62 through col. 7, line 59). But Williams et al. do not specifically disclose the physical layer block proceeding with reception or transmission of signals. However Brief et al. disclose the transceiver for utilizing as the connection point between the plurality function devices and the USB Bus, transmitting signals to or receiving signals from the USB Bus and performing the signal format conversion (see figure 7, col. 7, lines 11-42). Therefore, it would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have combined the teachings of Brief et al. within the system of Williams et al. because it would perform a control transfer over a USB and in particular to responding to setup, data, and status transactions of a control transfer.

In regard to claim 27, Williams et al. disclose wherein the step of setting up said physical layer block comprising: using a serial interface engine to execute the decoding, encoding and format translation of the transmitted signals, and perform cyclic redundancy check code inspection while transmitting/receiving data (see col. 4, lines 8-58). But Williams et al. do not specifically disclose the using a USB transceiver to transmit or receive signals and perform the conversion of signal format. However Brief et al. disclose the transceiver for utilizing as the connection point between the plurality function devices and the USB Bus, transmitting signals to or receiving signals from the USB Bus and performing the signal format conversion (see figure 7, col. 7, lines 11-42). Therefore, it would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have combined the teachings of Brief et al. within the system of Williams et al. because it would perform a control transfer over a USB and in particular to responding to setup, data, and status transactions of a control transfer.

***Allowable Subject Matter***

6. Claim 24 is allowable over the prior of records.
7. The following is an Examiner's statement of reasons for the indication of allowable subject matter: Claim 24 is allowable over the prior art of record because the Examiner found neither prior art cited in its entirety, nor based on the prior art, found any motivation to combine any of the said prior arts which teach a method of enabling a plurality of function devices to connect to a USB host with the same set of endpoint numbers and have their respective and independent USB addresses, comprising the following steps: configuring the logical endpoints and the correlation between the logical/physical endpoints of the plural function devices in sequence; proceeding with logical/physical endpoint translation when the comparison matches; and transmitting the signal to the function device represented by the physical endpoint.
8. Claims 6-12, 15-23 28, 30-31, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is an Examiner's statement of reasons for the indication of allowable subject matter: Claims 6-7, 15, 28, 30-31, are allowable over the prior art of record because the Examiner found neither prior art cited in its entirety, nor based on the prior art, found any motivation to combine any of the said prior arts which teach an application interface engine for transmitting signals and accessing data between said generic endpoint state machine, said memory access control unit, and the plural non-USB interfaces connected with said circuitry (claims 6, 15); a physical endpoint configuration mechanism for storing the type, the maximum



packet size, and the memory allocation data in said memory module of each physical endpoint; and a logical/physical translation module for translating the logical/physical endpoints of the plural function devices connected with the USB compound device (claim 7); storing the physical endpoints and its endpoint configurations by a physical endpoint configuration mechanism; and executing the translation of logical endpoints and physical endpoints by a logical/physical endpoint translator (claim 28); using an event control module to receive the events generated by said generic state machine and said memory access control unit during communication and inform the function devices represented by the physical endpoint numbers in said application unit of the event (claim 30); using a connection/removal detecting circuit to detect connections or removals of the USB ports (claim 31).

The remaining claims, not specifically mentioned, are allowed for the same rationale from the parent claims by dependency.

### ***Conclusion***

10. Claims 1-5, 13-14, 25-27, 29 are rejected. Claims 6-12, 15-23 28, 30-31 are objected. Claim 24 is allowed.

7. The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure.

**Watson et al. (US No. 6,218,969)** disclose an universal serial bus to parallel bus signal converter and method of conversion.

**Hu et al. (US No. 6,230,226)** disclose a compound device implementing hub and function endpoints on a single chip.

**Dunniho** (US No. 6,185,641) discloses a dynamically allocating space in RAM shared between multiple USB endpoints and USB host.

**Silverman et al.** (US No. 6,370,603) disclose a configurable USB controller implemented on single integrated circuit chip with media access control.

**Siddappa et al.** (US No. 5,5974,486) disclose an USB device controller comprising a FIFO associated with a plurality of endpoints and a memory for storing an identifier of a current endpoint.

**Zolnowsky** (US No. 6,718,423) discloses a bus hub with a selectable of ports.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Raymond Phan, whose telephone number is (703) 306-2756. The examiner can normally be reached on Monday-Friday from 6:30AM- 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Primary, Paul Myers can be reached on (703) 305-9656 or via e-mail addressed to paul.myers@uspto.gov. The fax phone number for this Group is (703) 872-9306.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [raymond.phan@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.



PAUL R. MYERS  
PRIMARY EXAMINER



**Raymond Phan**  
6/9/04